

## DO I MEAN WHAT I SAY AND SAY WHAT I MEAN? A CROSS-CULTURAL APPROACH TO THE USE OF EMOTICONS & EMOJIS IN CMC MESSAGES

*¿Digo lo que siento y siento lo que digo? Una aproximación transcultural al uso de los emoticonos y emojis en los mensajes en CMC*

Dra. Lifeng CHENG  
Profesora titular de la Universidad de Salamanca (España)  
E-mail: [lfcheng@usal.es](mailto:lfcheng@usal.es)

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### ABSTRACT

The use of emoticons and emojis among online messaging users has achieved a globalized level. This article aims at examining how certain emojis and emoticons are chosen by message senders to regulate the intensity of emotions in their messages. Or, whether by means of using them, message senders wish to blur textual rigidity and show interaction empathy during the communication process. This study analyzes the use of these symbols and graphic elements in message exchanges through CMC and SNS, where users from different culture backgrounds convey their feelings. To do so, two empirical studies with a methodological design were carried out: One pilot study was intended as research instrument validation. The second was a survey study. By testing online messaging habits, this study enabled the researchers to observe whether the senders were inclined to using linguistic text use only, or whether they preferred including an additional emoticon or emoji in their message to communicate their feelings. Results of this research show that, to a certain extent, message senders' different cultural backgrounds could influence their emotional expressivity level.

**Key words:** CMC, culture variability, emojis, emoticons, SNS, ICT.

### RESUMEN

El uso de los emojis y emoticonos entre los usuarios de mensajería *online* es un fenómeno global y generalizado. El presente estudio analiza las preferencias entre los usuarios de unos emojis y emoticonos sobre otros con el fin de adecuar mejor la expresión de sus mensajes con la emoción que contienen. Lo hacen así para intensificar o difuminar la rigidez textual. También, para manifestar su propia empatía durante las interacciones del proceso comunicativo. Este trabajo analiza el uso de estos símbolos y elementos gráficos en el intercambio de mensajes online por medios sociales; a través de ellos los usuarios, según su diferente procedencia cultural, van a transmitir aquellos estados emocionales que más se sientan afectados. Para ello, se han llevado a cabo estudios empíricos basados en un diseño metodológico que consta de dos fases de investigación: Un estudio piloto para la validación del instrumento investigador y un segundo estudio basado en encuesta. Los resultados observados indican que la procedencia cultural podría influir, hasta cierto punto, en el grado de expresividad de su gente a la hora de elegir entre 1) el uso de texto verbal único, 2) los elementos de signo en el teclado, 3) la inclusión de un emoticono o, 4) un emoji facial expresivo, cuando utilizan la mensajería *online* de medios y redes sociales para comunicar sus sentimientos o emociones.

**Palabras clave:** CMC, emojis, emoticonos, SNS, TICs, variabilidad cultural.

## 1. INTRODUCTION

The use of applications derived from information and communication technologies (ICT) has become part of the everyday life of many people in our planet. Over the last decade, access to the internet has been adopted by the general population as a social vehicle for their interpersonal interactions. CMC, which stands for *Computer-mediated communication*, is an umbrella term that includes any human communication that occurs through the internet and with ICT, and whose development and expansion are constant all over the world and among all social levels.

Essentially, CMC is defined as any human communication that occurs through the use of two or more electronic devices. While the term has traditionally referred to those communications that occur via computer-mediated formats, it has also been applied to other forms of text-based interaction such as text messaging. Until recently, most research on CMC was focused on studies about the social effects of the different communication technologies with computer support (Adrianson, 2001), whereas many of the most recent analyses study social networks with social software support. In this regard, CMC is considered a process where there is an interaction of human data through one of more telecommunication systems and software connected online. These systems and software include: email, Internet Relay Chat (IRC), instant messaging (IM), Usenet (Users Network), LISTSERV (mailing list servers —mailing lists that provide internet services based on emails and that include a group of electronic addresses used to send messages or announcements to the members of the list—), as well as SMS, acronym of Short Message Service, a text messaging system for mobile phones, as well as SNS (Social Networking Service).

CMC can take place synchronously and asynchronously. In the first mode, all the participants take part in the communication simultaneously. In the second one, there are time restrictions between the moment in which the message is sent and the moment in which the response is received, as in the case of emails. The key characteristics of CMC make it possible to record and retake the conversation, and they include formal communication and/or the anonymity of the user, depending on the type of software used—for example, IM (instant messaging)—. However, the emotions underlying a statement from a user may be difficult to interpret due to the lack of face-to-face communication. The lack of visual contact can generate misunderstandings in the form of unwanted negative effects. Therefore, emoticons represent a useful tool to bridge that gap.

It seems that this aspect has been partially overcome with the possibility to include emoticons and emojis in digital messages, although the consequences of their continued use are not very clear: Are users changing the way they think? Have our brains changed over the last few years with the appearance of emoticons and emojis? Are speaking patterns changing? Both emoticons and emojis are recognized and processed by the brain as non-verbal information, which means that we “read” them as part of emotional communication. And we can ask yet one more question: Does their use vary across different cultures?

This last question is the main focus of our study, which analyzes whether there is a differentiated preference in the use of emoticons, emojis or verbal text alone among the speakers of different cultures when expressing their emotions or their empathy.

## 2. LITERATURE REVIEW

### The origin of emoticons and emojis

Although both terms are used interchangeably and often as synonyms, the truth is that they are different things. The term “emoticon” is a portmanteau of “emotion” and “icon”, and it refers to

emotion and images. They are commonly used in CMC, in which the typical factors of face-to-face communication are eliminated, such as the rhythm of enunciation, gestures, body distance, immediate feedback from the interlocutor, etc. (Dresner & Herring, 2010). Social presence and communication theories postulate that for communication to take place effectively, participants need to have a way to obtain immediate feedback or use natural language (Ekman, 1993). In general terms, CMC lacks the available channels and key elements for effective communication. This is due to the lack of a social context applied as a theoretical reference. Some researchers claim that CMC users have developed new non-verbal signs, such as paralinguistic expressions, which are called “emotex” or “emoticons” to overcome those limitations and, in fact, they are used by many users and net surfers in their communications over the internet. Ferris (1996: 34) defines “emotex” as non-verbal signals to emphasize emotion and suggests that an emotex consists of lexical replacements for non-verbal signs. In this regard, as the term implies, emoticons represent visual substitutes with the characteristics of a text which contain symbols to express different types of emotion. Their invention is attributed to Scott Fahlman, from the Carnegie Mellon University in the USA, who represented a smiling face with keyboard signs on the computer and was the first person to use these symbols three decades ago (Ptaszynski & Arak, 2010). These authors explain that Fahlman created the *smiley* symbol with three keyboard signs :-) on his computer, and another symbol, the *frowny*, with these signs :-(. Afterwards, he added another symbol “)” to the *frowny* for emphasis, thus creating the symbol *angry* :-), to express the feeling of anger.

Originally, these combinations of keyboard signs were used to identify jokes in a scientific discussion forum about computing. Afterwards, their use was adapted to optimize computer-mediated interactions. As Fahlman explains on his website (<https://www.cs.cmu.edu/~sef/sefSmiley.htm>), he came up with the idea in 1982 as a response to the interpretation problems regarding the messages exchanged on the electronic boards in which different topics were discussed online between teachers and students, who thought that it would be a good idea to explicitly mark posts that were not to be taken seriously because in a text-based online context, users did not have the additional information provided by body language or the tone of voice as in a face-to-face conversation, in which those body or aural nuances can provide information about the information or the tone of the message. In view of this situation, Fahlman thought that the sequence of characters :-) could be an elegant solution, because all the computers available back then, based on ASCII code, were equipped with these signs. He also thought that they could be a complementary way of protecting other people’s feelings and express different states of mind (Ptaszynski & Arak, 2010). Since then, these symbols have become popular for thousands of people who use them on a daily basis, together with other emoticons that were created later, to express their mood, their agreement or disagreement, their state of mind, etc.

Emojis have later on represented an extraordinary creative advance. These are single, closed icons that portray graphically a wide range of emotions that can be interpreted visually. They are used to express the emotional states of each text strictly based on the symbols themselves, just as the use of non-verbal language is used in face-to-face communication. Emojis also help to emphasize or highlight the tone or the meaning of a message when it is being written (Crystle, 2001). Apart from making it easier to communicate a mood (Constantin & Kalyanaraman, 2002), emojis clarify textual messages through the screens, just as non-verbal language does in face-to-face communication (Walther & D’Addario, 2001).

Emojis have evolved to become a new language. Their different designs provide new codes that stimulate their increased use by CMC users. Emoji designers are constantly creating new and exclusive characters to increase the range of feelings that can be conveyed, with greater detail and in an attempt to achieve a more effective understanding. Everyday new emoji models appear in the messaging systems of Twitter, Facebook and mobile phones. Many new possibilities to share different emojis can be found in the chat and personal page messages in Facebook.

Although emoticons and the new emojis, which were created later, are very popular in the area of communication, they are not always compatible with all the devices, and in some cases they are shown with a different design. For this reason, there are different emojis depending on the cultural area covered by each mobile device and its potential users.

### Background studies about the use of emoticons and emojis in CMC

Previous studies claimed that CMC lacks any sign of non-verbal interaction and, as a consequence, internet users have adopted the use of emoticons to improve their communication. It is thought that these features will replace the signs lost in the discourses written on a computer. A review of the literature reveals that emoticons are used as socio-emotional providers in the context of CMC, where it has been shown that the use of emoticons and emojis has evolved to the point in which it has become a recurring element in almost all computer-mediated interaction modalities (Lo, 2008). Different researchers have studied them from different perspectives. For example, the psychological approach tends to focus on emotions and on the role played by emoticons/emojis on the understanding of messages. Linguists have analyzed emoticons with regard to speech, as a parameter in writing and in the search for a semantic and syntactic explanation, together with their functional classification and visual aspects. Rather than merely being an internet para-language, the graphemes in emoticons have been compared to vocabulary morphemes with different functions regarding their meaning (Pierozak in Amaghlobeli, 2012). This would imply that emoticons can become units like morphemes, in which there may be derivation, inflection or abbreviation, but which would not be isolated units. A pedagogical study has even proposed the creation of an emoticon-based universal language which could be introduced into the education system (Jibril and Abrudllah, 2013).

In another study, Tossell *et al.* (2012) focused on understanding how emoticons were used in text messages. More specifically, they analyzed the differences in the variety of emoticons and the frequency of use between men and women who send messages over social networks. The differences observed reveal that women send a higher number of messages with emoticons, whereas men use a more varied range of these elements. Another analysis shows that men use emoticons to create humor and show emotions whereas women use them to communicate sarcasm (Lee, 2003). On the other hand, Huffaker and Calvert (2006) analyzed the contents of different blogs and observed that blogs written by men had a higher number of emoticons than those written by women. Other studies suggest that women tend to use more a non-verbal communicative style in F2F encounters (friend-to-friend). Derks *et al.* (2007) wanted to verify whether this also happened in CMC, and developed studies that focused on the differences between both sexes, with mixed results. On the internet, men did not use many emoticons when commenting on sports news where most of the readers were also men. However, when men participate in mixed groups, they used emoticons more frequently. The authors suggest that both men and women want to clarify their emotional state through a reading of the contents. Also, although the frequency of emoticons found in mixed forums were more or less equivalent, each sex used them in a different way. This finding seems to indicate that in all the methods used to analyze CMC exchanges, there are no systematic differences between both genders because the emoticons are used differently depending on the tasks, contexts and media that are being used. The same thing happens with facial expressions and other non-verbal communication types, which are recurrent to communicate social findings and emotions; and to make the meaning of messages clearer (Derks *et al.*, 2007).

One important finding observed by the researchers is the lack of contextual information in CMC exchanges, which affects the comprehension of contexts and the tone of the messages. This lack of context has been considered by the emitters of the messages as the culprit of creating the perception of electronic messages as being unpleasant or offensive (Jenson, 2005; Derks *et al.*, 2007). This proves that emoticons can supply this information in order to improve understanding in CMC. Emoticons

are defined as the graphic representation of facial expressions which are embedded in electronic messages. Derks *et al.* (2007) have also observed that emoticons are more commonly used in synchronous communication. This suggests that the immediacy of their use can promote a better communicative relationship. Other empirical studies observed that the online visualization of electronic texts without emoticons led to a misinterpretation of the intended tone of the message and the attitude of the senders (Lo, 2008). The inclusion of emoticons helped readers to understand better the level and direction of the emotional context around the message sent over the internet. In instant messaging, positive emoticons were used more often than negative ones, and their use intensifies the validity of the message. In that study, emoticons were mainly identified as a way to express emotion, strengthen the messages and show humor or sarcasm.

Rezabek and Cochenour (1998) analyzed a set of emails with the program *LISTSERV* to decipher the content of emoticons and their frequency of use. These researchers observed that 1-25% of the emails in their study contained emoticons, and that the *LISTSERV* entry with the highest number of analyzed messages only contained 6% of all emoticons. Afterwards, Ling (2005) examined 882 messages through telephone interviews to collect data and found that only 6% of those messages contained emoticons. The authors claim that there are many factors that may have had an influence on such a significant variability between different messages, such as the strength of the social bond, gender, age, or geographic distribution, which were not assessed in the study. Due to the brevity of communications through SMS (Short Message Service) and the fact that it is used both synchronously and asynchronously (Kasesniemi & Rautianen, 2002), it is possible that the use of emoticons may follow different patterns in its use or as an amplifier of significance.

Another more recent international study based on a survey with a sample of Chinese subjects concluded that 88% of the respondents used emoticons (Qiao, 2010). These users preferred SMS over other channels and resources offered by F2F platforms to express emotions to others in their social networks. The findings also reveal that most of these users employed emoticons for comic purposes and as a substitute for non-verbal elements in face-to-face communication.

### Cultural style in communication and use of emoticons

People learn to communicate their thoughts and feelings and the values of the culture they share (Gudykunst, 1997; Gudykunst *et al.*, 2005). The continuum individualism-collectivism (Gudykunst *et al.*, 1996; Hall, 1976; Hofstede & Bond, 1984; Hofstede *et al.*, 2010) as a specific cultural marker has been considered by transcultural researchers the most important factor to explain the way in which culture can affect the communicative styles of individuals. These styles include the use of language, self-representation and non-verbal signs. Culture is expected to shape both verbal and non-verbal communication. Based on empirical studies, Gudykunst *et al.* (1996) claim that the styles used by different individuals to communicate with each other vary depending on the cultures they come from (p. 511).

Researchers in transcultural and intercultural communication claim that cultures can be classified through the different ways in which their members communicate (Hall & Hall, 1990). Nordic cultures, which are characterized by individualism, such as the ones found in Germany, the Netherlands or Austria, where people tend to communicate with each other with a more direct approach, are considered “low-context cultures” (LCC). Other cultures, with a more collectivist nature, such as those in Latin America and particularly in Asia—including China, Korea and Japan—, where native speakers tend to use a non-verbal style that includes body language and silence to communicate, are considered “high-context cultures” (HCC). Similarly, Gudykunst *et al.* (1996) associate the communicative style of a “high cultural context” with the use of indirect, ambiguous, conservative and controlled language.

Conversely, the communicative style of a “low cultural context” tends to use direct, dramatic, open and feeling-dependent language. According to the definition of both categories, these authors agree on the fact that the cultures of China, Japan, Korea and other Asiatic cultures are more appropriately classified as cultures of “high context”, whereas countries like Germany, Switzerland or the United States are categorized as cultures of “low context”. Mediterranean countries such as France, Italy or Spain are halfway between LCC and HCC, according to transcultural researchers. The questions asked by transcultural scholars about the differences in communicative styles between cultures are interesting to us because they research the possible existence of cultural patterns in the preferential use of emoticons by people who come from different cultures.

Different cultures can shape different cognitive processes and practices in the individuals that are part of them because culture has an influence on experience. The results obtained from previous studies (Páez *et al.*, 2004; Fernández *et al.*, 2000) reveal that emotional reactions are perceived and referenced more intensely by people who belong to developed societies in which an individualistic culture is more appreciated and a feminine orientation is applied, with a social structure that favors low differences in power, etc. Also, different cultures reveal their emotions differently: facial expressions, postures and body movements, looks and physical contact play a significant role on social interaction. These elements represent the visible forms in which cultural idiosyncrasy can be expressed.

On the other hand, Walther and D’Addario (2001: 344) concluded in their study that the real communicative effects of an emoticon are minimal within the context of the linguistic signs it might accompany. Later, Provine *et al.* (2007) found that emotional expression was subordinated to the production of spoken sentences. However, in contrast with this perspective, in other experimental studies Derks *et al.* (2008) observed the influence of emoticons as leading to more positive messages than in the cases in which they were not present. They concluded that emoticons could replace some of the functions of non-verbal behavior, complementing and improving the verbal message, although without the ability to contradict it.

### Expression of emotions and reduction of framing effect

In a previous experimental study, Thompson and Foulger (1996) already examined the effect of emoticons on the perception of framing. The results of that study revealed that emoticons could indeed alter the perception of framing and make the readers aware that they could interpret the message in a less serious tone. Therefore, their use represents a useful strategy to prevent cases of unintentioned framing. Ellensburg (2012) confirms with her findings that a very frequent use of emoticons in the professional field may reduce perceptions of power, competence, status and morality.

In sum, emoticons are basically graphic images with multiple and diverse uses which allow users to express their feelings through CMC. However, we still do not know with certainty what cultural or demographic aspects may affect their use in communication and under what emotional state users prefer to use certain emoticons to express the emotions they feel, such as anger, happiness or sadness.

## 3. GENERAL OBJECTIVES OF THE STUDY

The purpose of this study is to know and describe the use of emoticons in communication under the influence of the emotions embedded in the messages and the cultural background of the users. To do so, a questionnaire has been designed to collect information on whether emoticons are indeed used in SMS messages in CMC or SNS by users from different cultures; and to observe whether there are cultural patterns that determine the use of emoticons. Apart from considering the possible influence of variability in communicative cultural styles on the models of preferred use of emoticons, this study focuses particularly on the emotional state of users at the time of sending online messages. The analy-

sis of this research casts light on the question of whether the emotions felt by users may have an influence on the choice of the type of emoticons that they consider more effective to convey their feelings.

### Research questions

We are based on the arguments reviewed in previous studies which seem to suggest that, regardless of cultural differences, humans tend to show a universal desire for maintaining optimism and a good mood in spite of crises and conflicts. Therefore, this study sets out the following questions for analysis and discussion:

*Question 1:* Do users in general, regardless of their cultural origin, who send positive messages through CMC choose to pair them with any type of non-verbal sign to convey and share their optimistic mood?

*Question 2:* Compared with the transmission of positive messages, do users in general reduce the frequency of use of sad non-verbal signs to convey negative messages through CMC to prevent an emphasis on the sad mood of those messages?

Anger is an instinctive feeling associated to moral balance that emerges when faced with an injustice and which causes a feeling of energy or impulsiveness in the individual. This leads the individual to act with intensity and immediately in order to actively solve the conflict situation. Considering this state of anger, we present:

*Question 3:* Do CMC users in general transmit messages which include verbal text directly rather than using emoticons with angry expressions?

In his original work, Hall (1976) argued that individuals from LCCs interpreted face-to-face communication as a way to approach problems and solve them. Conversely, people from HCCs transmitted messages without directly mentioning the problem verbally, and they preferred to use non-verbal expressions and let harmony flow. Considering these arguments, the following questions are presented:

*Question 4:* What are the preferences of Chinese individuals compared with Spanish individuals regarding the use of emoticons to communicate messages about “anger” in CMC?

*Question 5:* What are the preferences of Chinese individuals compared with Spanish individuals regarding the use of emoticons to communicate messages about “happiness” in CMC?

*Question 6:* What are the preferences of Chinese individuals compared with Spanish individuals regarding the use of emoticons to communicate messages about “sadness” in CMC?

## 4. METHODS

### The pre-test

In order to verify the correct identification of meanings conveyed through the emoticons most commonly used online, these characters were subject to a previous test for the unequivocal definition of the emotional message that each emoticon conveyed for CMC users. In the present study, the nine best-known and most widely used emoticons in CMC were used as a tool to examine the preferences of users when expressing their emotions in messages sent over the internet or social networks.

### - Tool validation

The emoticons used for this study were, in the first place, created with ASCII symbols in the keyword to represent *happiness* :-), *sadness* :-( and *anger* x:-( ; next, we used the faces known as *smiley* 😊, *frowny* ☹️ and *angry* 😡; and finally, we used the emojis with graphic facial elements that showed *happiness* 😄, *sadness* 😞 and *anger* 😠.

Table 1. Results of the pre-test for the identification of tools (N=40)

Emoticons/emojis	Meaning identification match %			
	Happiness	Anger	Sadness	Confusion
;-)	94,8	2,6	0	2,6
😊	100	0	0	0
😄	100	0	0	0
x:-(	0	79,5	10,3	10,2
☹️	0	100	0	0
😡	0	100	0	0
:-(	0	5,1	92,3	0
☹️	0	2,6	97,4	0
😞	0	5,1	94,9	0

The reason why these elements were chosen is based on the research carried out by Rezabeck and Cochenour (1998), who claimed that, although the *LISTSERV* platform contained a higher variety of emoticons, these were the ones which appeared more frequently and, therefore, had a higher chance of creating a shared understanding of the meanings conveyed through them.

In this pilot test, 40 young individuals from a Spanish city with an approximate population of 200,000 people participated as volunteers. They were chosen randomly and their general profile can be summarized as follows: Average age=26.3 years (SD=7.26); 70% with a culturally Spanish origin and 30% from Asiatic cultures; 71.8% were students and 28.2% were workers; 60% were women and 40% were men, with an average of 1-3 messages sent daily through CMC or SNS (Social networking services). The results obtained (Table 1) showed a high percentage of matches with regard to the identification of the meaning of the most commonly used emoticons, with a range of 79.5%-100%. This reveals the existence of a very high degree of agreement among the subjects of the pilot study on the different signs, the human emotions they represent and the meaning of their use in a communicative context.

This pilot study confirms the postulate by Rezabeck and Cochenour (1998) that claimed that the most widely and commonly used emoticons are more likely to produce a shared understanding of the meanings conveyed through them (Table 1).



This verification of the agreed identification of the meaning of the emoticons proposed in the pilot study allowed us to use them later on in the instrumental design of the present study.

### Survey study and instrumental design

A questionnaire was designed with 35 statements about common situations in the daily life of every human being. The objective was to know the preferences of users regarding the use of emoticons or emojis in the text messages that could best convey their mood when sending those messages through CMC or SNS. These statements were grouped as items into the following sections:

#### ***-Items with a communicative message about situations with the emotion of happiness***

In this part of the questionnaire, participants are asked about their preferences regarding the use of emoticons to express and convey their feelings through online messages in twelve situations in which they would probably feel happy, joyful, glad and optimistic. For example: “*I have received a prize for a work well done*” or “*I have had a nice and unexpected surprise*” or “*Receiving love, kindness or a show of affection*”, etc. In order to indicate their response to each item in the twelve situations related to happiness, participants used a number scale with different happiness emoticons provided in the questionnaire. Participants could choose different emoticons/emojis according to their order of preference to express and convey their mood in messages through CMC or SNS: 1=“none”; that is, the message only uses verbal text; 2 = :-); 3 = 😊; 4 = 😍.

#### ***- Items with a communicative message about situations with the emotion of sadness***

In order to observe the preferences in the use of emoticons with which participants express and convey their feelings of sadness when sending messages through CMC or SNS, they are shown twelve sad situations in which humans feel affected, for example: “*The death of a loved one*”, or “*Living in solitude*” or “*Ending a relationship*”. The participants chose their order of preference regarding the use of emoticons/emojis included in the scale to express and convey their mood in messages through CMC or SNS for each item of these situations of sadness: 1=“none”, the message only uses verbal text; 2 = :-(; 3 = 😞; 4 = 😓.

#### ***- Items with a communicative message about situations with the emotion of anger***

This section includes 6 items describing situations in which a person may experiment or react with anger, ire or a feeling of annoyance. For example: “*I feel impotent against the actions of others that are incorrect, illegal or contrary to common sense in my opinion; but there is nothing I can do and I have to put up with them*” or “*I have been disrespected*”. Participants were given a scale with different emoticons/emojis that they had to choose according to their preferences to respond to each of the six items related to the feeling of anger: 1=“none”, the message only uses verbal text; 2 = :-(: 3 = 😡; 4 = 😠.

#### ***- ICT use variable***

The questionnaire included a section with three items about the use of social networks with a smartphone, use of the internet and information searchers on websites. It also included an item about the time spent online by participants whenever they went online, and an item that asked participants about their use of a foreign language to communicate with others through CMC and SNS.

### *-Demographic variables*

Information was collected about participants through four demographic items: age, gender, cultural origins and working/studying situation.

### Participants



In this survey the questionnaire was completed by 140 users of internet through CMC and SNS or SMS with mobile phones. The participants were volunteers and included users of online communication, undergraduate university students and graduate students in Master's Degree programs in an age range of 18-41 years, an average age of 23.14 years and  $SD=4.02$ . The gender distribution was 57.1% women and 42.9% men. With regard to their cultural origins, 58.3% had been raised in a Spanish culture and 41.8% in a Chinese culture. Their professional profile was: graduate students=86.3%; undergraduate students=2.1%; working and studying at the same time=11.7%. Participants were recruited in university libraries and classrooms in Spain.

## 5. RESULTS

### Preliminary analysis



A preliminary analysis was performed with a contingency table to obtain the following descriptive results:

### *-Use of text, emoticons or emojis in angry messages*

First of all, we analyzed the frequency with which respondents used non-verbal signs, such as the ASCII code sequence  $x)-($  on their keyboard, the *angry* emoticon  or the angry emoji  to send messages through CMC about daily situations that lead to anger which were presented in the questionnaire.

In this analysis, with the exception of item 3, “*Things are not going as well as I expected*”, where the users preferred the angry emoji (39.3%), the data reveal that respondents prefer the use of a direct verbal communicative style to convey their angry mood in three out of the six items, with percentages of 45%, 37.9% and 42.9% respectively, and with statistical significance between  $p < .001$  and  $p < .01$ . In the multivariate test, the results were  $\chi^2(3) = 19.51$ ;  $p < .001$ ; Kendall's  $W = .051$  (Table 2).

Table 2. Preferred use of verbal text, signs or emoticons in angry messages through CMC (%)

Angry message item	Text only	$x)-($			$\chi^2$	$p$
1) Similar negative things keep happening to me.	32.9	18.6	26.4	22.1	6.34	.096
2) I have been disrespected.	45.0	12.1	15.7	27.1	36.74	.000
3) Things are not going as well as I expected.	30.7	22.9	39.3	7.1	31.37	.000
4) Someone or something has interfered with or interrupted the work or the task I was doing.	29.3	17.9	31.4	21.4	6.91	.075
5) I have to endure malaise, physical pain or mental stress.	37.9	22.9	23.6	15.7	14.45	.002
6) I feel impotent against the actions of others that are incorrect, illegal or contrary to common sense in my opinion; but there is nothing I can do and I have to put up with them.	42.9	17.1	21.4	18.6	24.34	.000

$N = 140$ ,  $\chi^2(3) = 19.51$ ;  $p < .001$ ; Kendall's  $W = .051$

### - Use of text, emoticons or emojis in happy messages

Table 3. Preferred use of verbal text, signs or emoticons in happy messages through CMC (%)

Happy message item	Text only	;-)	😊	😄	$\chi^2$	$p$
7) I have been given a prize for a job well done.	12.1	14.3	29.3	44.3	37.54	.000
8) The results were what I expected.	11.4	20.7	44.3	23.6	32.28	.000
9) I am praised with great esteem.	16.4	23.6	35.0	24.3	9.92	.019
10) I achieved what I had always wanted.	12.1	17.6	28.6	42.1	29.88	.000
11) I have had a nice and unexpected surprise.	12.1	16.4	30.7	40.0	27.99	.000
12) I have experienced a very pleasing physical and mental sensation.	19.3	20.7	32.9	25.7	6.40	.093
13) I have been returned a favor for what I did.	27.9	27.9	32.9	10.7	15.90	.001
14) Receiving love, kindness or a show of affection.	12.1	17.9	32.9	37.1	23.82	.000
15) Meeting with friends or relatives.	29.3	10.7	37.9	22.1	22.17	.000
16) I have received some presents.	19.3	13.6	36.4	28.6	17.48	.000
17) Reality exceeds expectations.	18.6	20.7	25.0	35.0	9.0	.029
18) I have received good news.	13.6	17.1	37.9	31.4	22.34	.000

$N = 140$ ;  $\chi^2(3) = 43.97$ ;  $p < .000$ ; Kendall's  $W = .11$

This analysis reveals that respondents decide to use the *smiley* emoticon 😊 (32.9%-44.3%) and the happy emoji 😄 (35%-44.3%) respectively with a higher frequency to convey online the happiness they experience in positive situations (Table 3).

These results show statistical significance levels between  $p < .001$  and  $p < .05$ , respectively, with multivariate analysis results of  $\chi^2(3) = 62.61$ ;  $p < .001$ ; Kendall's  $W = .11$ .

### - Use of non-verbal signs in sad messages

The analysis reveals that, unlike with the emotion of happiness, and instead of using non-verbal signs, respondents prefer to send CMC messages with verbal text about their feeling of sadness in most of the realistic situations presented in the questionnaire (34.5%-67.1%) (Table 4). These results show statistical significance levels ranging from  $p < .001$  to  $p < .01$ . A multivariate analysis test shows the following results for our data:  $\chi^2(3) = 62.61$ ;  $p < .001$ ; Kendall's  $W = .16$  for the items of sad messages.

Table 4. Preferred use of verbal text, signs or emoticons in sad messages through CMC (%)

Sad message item	Text only	:(	😞	😓	$\chi^2$	$p$
19) Things did not go well. The results was disappointing.	27.3	26.6	29.5	16.5	5.54	.136
20) The death of a loved one.	67.1	8.6	7.9	16.4	135.14	.000
21) Ending a relationship, parting ways.	61.4	17.9	7.9	12.9	101.88	.000
22) Realizing one's own incapacity.	42.1	23.6	26.4	7.9	33.14	.000
23) Hearing or seeing something which fills me with sorrow and pity.	32.9	24.3	26.4	16.4	7.71	.052
24) I have been reproached and rejected for something.	43.2	19.4	25.2	12.2	19.14	.000
25) I did not achieve what I wanted.	34.5	21.6	32.4	11.5	18.84	.000

26) Things are going worse than I anticipated.	36.2	24.6	26.1	13.0	14.92	.002
27) I feel bad because I hurt somebody through oversight.	38.1	19.4	24.5	18.0	14.06	.003
28) Serious illnesses in people close to me.	59.5	12.1	15.0	13.6	88.0	.000
29) Loneliness.	46.8	20.9	18.0	14.0	36.28	.000
30) The result of an unfair cause-effect relation	43.6	23.6	20.7	12.1	29.71	.000

$N=140$ ;  $\chi^2(3) = 62.61$ ;  $p < .000$ ; Kendall's  $W = .16$

### Transcultural studies about the use of emoticons and texts in online communication

In the following transcultural studies, the technique of *analysis of variance* (ANOVA) has been applied to observe the way in which the cultural variable might affect the expression of emotions among Spanish and Chinese internet users when sending online messages through CMC.

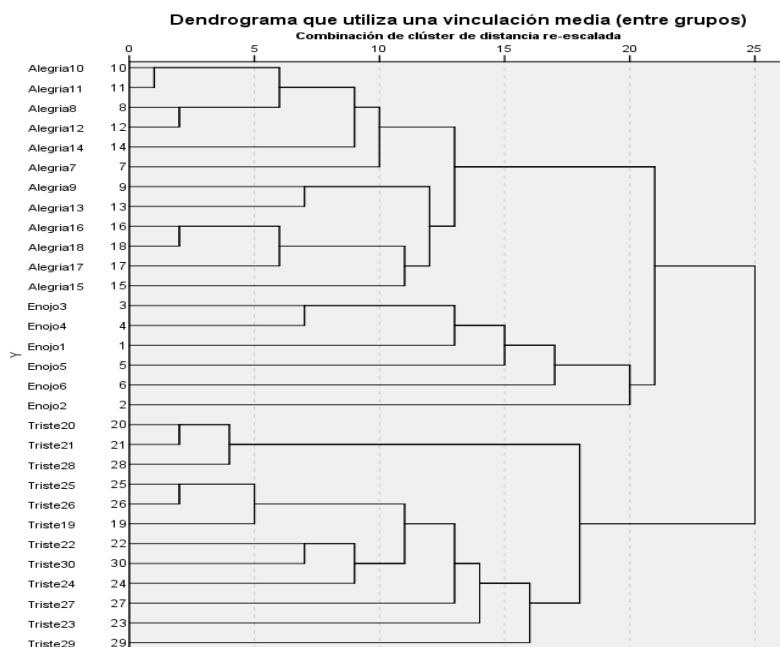
#### - Internal homogeneity test of the items through approximation

Before performing the ANOVA study, the different dimensions were classified through a cluster analysis in order to reduce the amount of data. We grouped the items of the three primary emotions according to their approximation. That is, the items within each cluster were homogeneous and they showed significant differences when compared to the contents of other clusters (Vilà-Buenos *et al.*, 2014). This classification made it possible to obtain the results of the different clusters based on the three basic universal emotions —happiness, anger, sadness. The dendrogram obtained with SPSS (Figure 1) shows that the items can be grouped into three emotion dimensions:

#### **Cluster 1: Anger**

- 3) Things are not going as well as I expected.
- 4) Someone or something has interfered with or interrupted the work or the task I was doing.
- 1) Similar negative things keep happening to me.
- 5) I have to endure malaise, physical pain or mental stress.
- 6) I feel impotent against the actions of others that are incorrect, illegal or contrary to common sense in my opinion; but there is nothing I can do and I have to put up with them.
- 2) I have been disrespected.

Figure 1. Cluster analysis

**Cluster 2: Happiness**

- 10) I achieved what I had always wanted.
- 11) I have had a nice and unexpected surprise.
- 8) The results were what I expected.
- 12) I have experienced a very pleasing physical and mental sensation.
- 14) Receiving love, kindness or a show of affection.
- 7) I have been given a prize for a job well done.
- 9) I am praised with great esteem.
- 13) I have been returned a favor for what I did.
- 16) I have received some presents.
- 18) I have received good news.
- 17) Reality exceeds expectations.
- 15) Meeting with friends or relatives.

**Cluster 3: Sadness**

- 20) The death of a loved one.
- 21) Ending a relationship, parting ways.
- 28) Serious illnesses in people close to me.
- 25) I did not achieve what I wanted.
- 26) Things are going worse than I anticipated.
- 19) Things did not go well. The results was disappointing.
- 22) Realizing one's own incapacity.
- 30) The result of an unfair cause-effect relation
- 24) I have been reproached and rejected for something.


- 27) I feel bad because I hurt somebody through oversight.  
 23) Hearing or seeing something which fills me with sorrow and pity.  
 29) Loneliness.

### **ANOVA: Transcultural study of the use of texts, emoticons and emojis by Spanish vs Chinese users in messages conveying emotions through CMC**



In order to develop this study, a transformation process was necessary to re-encode and recalculate the data through the creation of scales based on predefined measures.

The studies of analysis of variance were developed using the Spanish/Chinese culture as an independent variable and the emotional dimensions of “anger”, “happiness” and “sadness” as dependent variables, with four categories: “text only”; “keyboard-based emoticon using ASCII signs”, “emoticon” and “facial emoji”.

#### ***“Anger” dimension***

The results show that users in general prefer to use text only ( $M=.36$ ;  $SD=.31$ ) rather than the ASCII-based emoticon ( $M=.19$ ;  $DT=.20$ ), the “angry” emoticon ( $M=.27$ ;  $DT=.22$ ) or the facial emoji for anger ( $M=.19$ ;  $DT=.20$ ) to convey messages that involve angry moods that affect them. However, when comparing the preferences between different cultural groups, we have observed that Chinese respondents ( $m=.24$ ;  $sd=.22$ ) choose the ASCII sequence more often than Spanish users ( $m=.15$ ;  $sd=.18$ ). This difference has a statistical significance of  $p < .01$  ( $F[1.137]= 8.004$ ;  $\eta^2= .06$ ). On the other hand, Spanish respondents ( $m= .24$ ;  $sd= .22$ ) chose the facial emoji  more often than Chinese respondents ( $m= .12$ ;  $sd= .16$ ), with a significance of  $p < .001$  ( $F[1.137]= 11.961$ ;  $\eta^2= .08$ ) (Table 5-1).







#### ***“Happiness” dimension***



Users as a whole express a preference for the use of the “smiley” emoticon  ( $M= .34$ ;  $SD= .22$ ) to show happiness in online communicative messages, rather than using text only ( $M=.17$ ;  $SD=.21$ ), the ASCII sequence ( $M=.18$ ;  $SD=.20$ ) or the happy facial emoji  ( $M=.30$ ;  $SD=.24$ ). In this dimension of “happiness” we observe that Spanish respondents ( $m=.20$ ;  $sd=.23$ ) tend to use text only more often than Chinese participants ( $m=.13$ ;  $sd=.18$ ) with a significance close to  $p < 0.1$  (Table 5-2).

#### ***“Sadness” dimension***

In situations of sadness, users in our study generally preferred to use text only ( $M= .44$ ;  $SD= .29$ ) in their online communications. We have found that Spanish participants tend to convey their sadness through CMC with the use of text only ( $m= .53$ ;  $sd= .27$ ) more than Chinese respondents ( $m= .32$ ;  $sd= .27$ ). The difference is significant, with  $p < .001$  ( $F[1.137]= 20.185$ ;  $\eta^2= .13$ ). On the other hand, Chinese respondents use the ASCII-based sequence ( $m= .27$ ;  $sd= .19$ ) more often than Spanish participants ( $m= .15$ ;  $sd= .17$ ), and this difference is also significant ( $p < .001$ ;  $F[1.137]= 13.952$ ;  $\eta^2= .09$ ).

Table 5: Results of ANOVA regarding the preferred use of text only, non-verbal signs, emoticons or emojis among Spanish and Chinese users to convey their emotions through CMC

1. "Anger" dimension	Total		Spanish		Chinese		F		
	M	SD	m	sd	m	sd	(1.137)	p	$\eta^2$
<i>Angry text only</i>	<b>.36</b>	.31	.38	.30	.34	.32	.498	.481	.004
:-(	.19	.20	.15	.18	<b>.24</b>	.22	8.004	<b>.005</b>	.06
	.27	.22	.24	.20	.30	.24	2.390	.124	.02
	.19	.20	<b>.24</b>	.22	.12	.16	11.961	<b>.001</b>	.08
2. "Happiness" dimension									
<i>Happy text only</i>	.17	.21	<b>.20</b>	.23	.13	.18	2.877	<b>.092</b>	.021
:-)	.18	.20	.17	.22	.20	.17	.687	.409	.005
	<b>.34</b>	.22	.32	.22	.36	.21	1.330	.251	.01
	.30	.24	.31	.24	.29	.24	.188	.665	.001
3. "Sadness" dimension									
<i>Sad text only</i>	<b>.44</b>	.29	<b>.53</b>	.27	.32	.27	20.185	<b>.000</b>	.13
:-(	.20	.19	.15	.17	<b>.27</b>	.19	13.952	<b>.000</b>	.09
	.22	.17	.19	.17	<b>.26</b>	.18	5.589	<b>.019</b>	.04
	.14	.17	.13	.17	.15	.18	.504	.479	.004
	N= 139		n= 81		n= 58				


At the same time, Chinese respondents also reveal that they prefer the use of the "frowny" emoticon  ( $m = .26$ ;  $sd = .18$ ) more than Spanish respondents ( $m = .19$ ;  $sd = .17$ ), and the difference was statistically significant ( $p < .05$ ;  $F[1.137] = 5.589$ ;  $\eta^2 = .09$ ). However, the differences in the use of the sad facial emoji  among Chinese participants ( $m = .15$ ;  $sd = .18$ ) and Spanish participants ( $m = .13$ ;  $sd = .17$ ) was not statistically significant (Table 5-3).

## 6. DISCUSSION



The results obtained in our analysis provide a response to the research approach proposed prior to this study. It seems clear that, in spite of the crises and threats that this world lives through, humans want to convey messages of hope to maintain an optimistic mood. The first research question is answered with the results of the analysis shown in Table 2, that reveal how CMC users who were surveyed in our study send, in general terms, the 12 types of messages about positive situations they may find themselves in. Most of the times, they do not only send positive verbal messages, but reinforce them with non-verbal signs like the *smiley* emoticon or a happy facial emoji. A simple smiling face can give a friendlier and nicer tone to a message. These results are consistent with those of other previous studies that showed that the use of emoticons has a high communicative power in social networks, because they can capture the attention faster than plain text and quickly convey positive feelings.

Compared with the communication of positive messages, Question 2 asks whether users in general reduce the frequency of use of non-verbal sad signs to communicate sad messages through CMC in order to prevent putting an emphasis on the sad emotion in those messages. Indeed, our study shows that CMC users generally reduce significantly the use of non-verbal signs, ASCII-based keyboard emoticons ( $M=.20$ ), the *frowny* emoticon ( $M=.22$ ) and the sad facial emoji ( $M=.14$ ) to convey sad messages. Under these circumstances, the subjects in our study prefer to use direct verbal texts ( $M=.44$ ).

Similarly, our study confirms the hypothesis presented in Question 3. The results of the analysis show that CMC users generally choose to send angry messages with verbal text ( $M=.36$ ) in which they can express themselves directly, rather than using non-verbal signs like the ASCII-based keyboard emoticon ( $M=.19$ ), the *angry* emoticon ( $M=.26$ ) or the angry facial emoji ( $M=.18$ ).

Also, Question 4 has been answered with the data that reveal that in general terms, and without differences between the different subgroups, users prefer the use of verbal texts ( $M=.36$ ) to convey angry messages. However, when comparing the most commonly used non-verbal signs in the two subgroups of participants, we have observed that Chinese respondents choose the ASCII sign  $\text{:-(}$  more often ( $m=.24$ ) than their Spanish counterparts ( $m=.15$ ). Conversely, Spanish participants opt for the angry facial emoji  ” ( $m=.24$ ) more often than the Chinese ( $m=.12$ ). These data were statistically significant with  $p < .01$  and  $p < .001$ , respectively.

With regard to Question 5, about whether the cultural background may affect the way in which CMC users transmit online messages about a happy feeling, the results of the analysis show that both cultural groups of participants like the *smiley* emoticon and the happy facial emoji without distinction. This confirms the universal nature of online communication of good feelings about positive situations.

Finally, our findings can cast light on the cultural aspect discussed in Question 6 about the differences between users from Spain and from China. The results show that, in general terms, both groups use texts as a first option, although Spanish respondents use plain text only ( $m=.53$ ) significantly more than Chinese respondents ( $m=.32$ ). However, with regard to the non-verbal use of the ASCII-based symbol  $\text{:-(}$  and the *frowny* emoticon  or the sad facial emoji  to convey sad messages online, Chinese participants used these resources more often than their Spanish counterparts.

In sum, the results of this study, which is based on premises from previous studies, show that unlike the universal attribution of the emotion of happiness to the positive situations experienced by different individuals, there are clear cultural differences associated with the communication of sadness. In this regard, the communicative style observed among the Spanish respondents to our questionnaire is oriented towards the low-context cultural end—in the continuum of cultural variability— compared with the communicative style of the Chinese culture, whose cultural prototype is placed on the opposite extreme (high context), in which there is a prevalence of an indirect communication style.

The previous observation is particularly clear in this study when we approach the communication of sadness through verbal vs non-verbal signs in CMC messages. Since the high-context communicative style in a collectivist culture (Hall, 1976) provides more information related to the physical environment, individuals in HCCs, like the Chinese, put their trust in non-verbal communication rather than in verbal communication, whereas a low context communicative style, characteristic of individualistic cultures, is identified with the opposite characteristics; that is, the meaning of messages is interpreted through what is written or said in verbal communication.



The same thing happens with face-to-face communication: HCCs tend to use non-verbal strategies to convey the meaning that may be transmitted through gestures, body language, silence or symbolic actions. This study has observed that people in the Chinese culture, which is more collectivist, generally use emoticons, rather than facial emojis —as we anticipated—, with more frequency and intensity than Spanish participants in the exchange of messages through CMC and SNS. On the other hand, in users with a cultural tendency relatively more individualistic, like Spanish culture when compared with Chinese culture, their communicative style would also follow the lines of a LCC.

Finally, with regard to a more common use of the angry facial emoji by Spanish respondents, we can interpret that the extroverted expression of that emoji is part of a direct communicative style, which characterizes LCCs, in an attempt to intensify the angry feeling more directly and unequivocally, rather than using a tenuous insinuation of the feelings that might be conveyed with other emoticons that use iconographic symbols.

## 7. CONCLUSIONS

This study has revealed data about some aspects of the use of non-verbal signs, like emoticons and emojis, among users of CMC and SNS to communicate messages about states of mind connected to different universal primary emotions: happiness, sadness and anger. The theory of cultural variability included here as a theoretical framework has been used as a basis to research whether there are different models for the preferential use of these non-verbal signs vs the option of using only plain text among users with different cultural backgrounds during the process of interaction through messages on CMC and/or SNS to convey the emotions they feel in different situations.

The technique of cluster analysis has been used as part of the methodological process. It revealed the internal consistence of the items with the number scale of the questionnaire. Thanks to this technique, the items are classified according to their approximation with each other to establish three emotional dimensions —happiness, sadness and anger—, which are considered by social psychologists the three primary human emotions shared by everyone, regardless of their cultural origin. Unlike these universally-shared primary emotions, there are others, like guilt, disgust, shame, etc., which according to the experts are culture-specific and must be analyzed within each cultural context.

Confirming the existence of the three clearly defined and different dimensions has allowed the research analyst of this study to perform an ANOVA test to examine the existence of cultural patterns in the use of non-verbal signs, such as emoticons, among users with different cultural backgrounds, to convey and exchange personal messages related to their emotions.

The findings are far from definitive due, on the one hand, to the small number of participants (N=140) who collaborated by completing the questionnaire, and on the other hand, to the necessarily reduced range of emoticons and emojis included in the instrumental design of this research. Also, the use of Spanish rather than Chinese may cause some variations in the interpretation of the exact meaning of the items by Chinese participants, although they were students enrolled in graduate and undergraduate programs in Spanish universities. These limitations aside, the data shown in the analysis give us an idea of the type of emotional context preferred by CMC and/or SNS users from different cultures and what type of emoticon/expressive emoji vs plain text they prefer in online messages to convey their mood.

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